

Middle Rio Grande Endangered Species Act Collaborative Program Science Subcommittee (SSc)

**30 November 2004 Meeting, 9:00 – 12:00 PM
USFWS Osuna Office Conference Room, Albuquerque, NM**

Agenda for 30 November 2004:

- Review and approval of notes from the previous SSc meeting
- Brief updates:
 - PMSc, InSC, and/or EC
 - The Long-Term Plan
 - PAP SOW
 - Fish Passage Workgroup
 - Water quality RFP
- Reviews of SSc Project reports
 - UNM FY-2003 Annual Report on ET Scaling
 - UNM FY-2003 Final Report on ET Scaling
 - FWS FY-2003 Annual Report on RGSM augmentation
 - Bosque soil evaporation monitoring and modeling first annual report
 - SWWF nest success on Isleta Pueblo 2003 Final report for tech review
- Problems and priority rankings for the RGSM
- Preliminary Report from the PAP
- Proposed agenda for next meeting

Review and Approval of Notes from the Previous SSc Meeting

- Draft notes from the previous SSc meeting were reviewed, minor edits were highlighted for incorporating into a revision, and the updated notes approved for distribution.

Brief updates: PMSc, InSC, and/or EC

- Development of the Program's Long-Term Plan by the Long-Term Plan Workgroup continues to progress; at this time no additional information is needed from the SSc.
- The Annual Report is also nearing completion; work on it is being led by Pete working with the Outreach Subcommittee.

Review of Program Project Reports

- Mike Marcus reported that copies of the SOWs for the projects reports requiring review have been obtained from the BUREAU OF RECLAMATION; and they will soon be scanned for distribution to the Project Review Teams.

Discussion of the needs for the Water Quality RFP

- Mike reported that he had received additional comments on the WQ RFP from Joel Lusk.
- Charles reported that RECLAMATION was also providing additional comments on the RFP.
- Each of the RECLAMATION comments were discussed and Mike was requested to include the SSc requested changes into the RFP, and then produce a memo to RECLAMATION documenting the SSc approach to addressing their concerns.

Problems and Priorities for RGSM – deep, in-channel refuge pools

- Most of the meeting then focused on a discussion of observations from the 2004 RGSM salvage efforts and application of this information to enhancing RGSM recovery potentials.

- Highlights from that discussion are attached at the end of these notes.
- Mike Hatch was asked to provide an update of this discussion during the December 1 WAMS meeting.
- This discussion will continue at the next SSc meeting, when the WAMS and HRS will be invited to participate.

Proposed Agenda for 14 December 2004 SSc Meeting, 9:00 AM, FWS on Osuna in Albuquerque:

- Review and approval of notes from the previous SSc meeting
- Problems and priority rankings for the RGSM - deep, in-channel refuge pools with HRS and WAMS
- Brief updates:
 - PMSc, InSC, and/or EC
 - The Long-Term Plan
 - PAP
 - Fish Passage Workgroup
 - Water quality RFP
- Reviews of SSc Project reports
 - UNM FY-2003 Annual Report on ET Scaling
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 - Bosque soil evaporation monitoring and modeling first annual report
 - SWWF nest success on Isleta Pueblo 2003 Final rept for tech review
- Proposed agenda for next meeting

**Science Subcommittee
30 November 2004 Meeting Attendees**

NAME	AFFILIATION	PHONE NUMBER	EMAIL ADDRESS
Sterling Grogan	MRGCD	247-0235	grogan@mrgcd.com
Mike Hatch	USFWS	280-1818	Michael_Hatch@fws.gov
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Charles Fischer	USBR	462-3656	cfischer@uc.usbr.gov
Pete David	MRG ESA CP Program Manager	761-4743	peter_david@fws.gov
Mike Marcus	TtEMI	881-3188	mike.marcus@ttemi.com

Restoration of Frequent, Deep, In-channel Perennial Pools as a Program Priority for the Survival and Recovery of Rio Grande Silvery Minnows

Middle Rio Grande Endangered Species Act Collaborative Program

Science Subcommittee – Concepts Paper

Draft – 06 December 2004

- During its discussion on 30 November, the SSc arrived at a number of consensus points regarding instream conditions and useful approaches to enhance the survival and recovery potentials for the Rio Grande silvery minnow along the Middle Rio Grande (MRG). These points and supporting concepts are collected below.
- *Historical periods of extensive and prolonged channel drying have occurred along the Middle Rio Grande, and such conditions are likely to reoccur, at least in the near term.*
 - There are periods when there will not be enough water to keep the Middle Rio Grande wet to Elephant Butte Reservoir, e.g., the March 2004 BO allows for drying of the river south of the Isleta Diversion.
 - These conditions are exacerbated during the periods when Article VII of the Rio Grande Compact prohibits significant upstream storage of native flows.
 - Water years 2005 and 2006 are projected to be particularly difficult years in terms of having high potentials for extended durations and extensive areas of channel drying
- *Maintaining the genetic diversity of silver minnows along the MRG should be a top priority for the Program.*
 - In reaches lacking significant suitable refuge/sanctuary habitat, localized populations of silvery minnows (as well as other fish species) will be extirpated.
 - In addition to causing declines in local population numbers, such losses typically have potentially greater significances and impacts in rare populations by reducing the overall genetic diversity left for the population remaining.
 - Decreases in genetic diversity makes the affected populations less able to cope with natural variability within their environment and, thereby, increases the potentials for extinction of the population.
 - Habitat restoration and water management efforts should aim to increase independent probabilities for survival fates for silvery minnows along different reaches of the river to help ensure maintaining greater genetic diversity.
- *The Rio Grande silvery minnow appear to have natural tendencies to cope with drying river conditions.*
 - The silvery minnow is a fish species that has evolved and is relatively well adapted behaviorally to live and survive in river systems with inherent, periodic, and sometimes extended episodes of extensive channel drying.
 - Despite this, persistence of silvery minnows in the MRG will depend on developing (restoring) suitable in-channel and near-channel wetted refuge/sanctuary habitat during period of channel drying.
 - Mike Hatch reports that silvery minnows are among the first species observed entering a rewetted reach and among the first to leave a drying reach.

- *During times of channel drying, population numbers of silvery minnows tend to be relatively greater upstream reaches, i.e., greater numbers nearer to the irrigation diversion structure.*
 - Mike reported that during salvage efforts along both the San Acacia and Isleta reach, relative numbers of rescued silvery minnows generally increased up through reaches
- *The frequencies of channel wetting and drying, and the durations of channel wetting both tend to increase upstream in a reach, being relatively greater at closer distances to the irrigation diversions.*
 - Mike also observed that the frequency of river rewetting and drying increased upstream within each reach, being maximal at locations nearer to the diversion structures.
- *The relative value and potential success of channel-associated habitat enhancements for silvery minnows increases where there tends to be more silvery minnows to benefit from the enhancement and where there exists the highest probabilities of encountering water most frequently and for the longest durations, i.e., in upper portions of reaches.*
 - Need to combine linear thinking on where minnows occur in greatest numbers with cyclic thinking on where water is present most frequently.
 - Channel drying = liability; channel wetting = opportunity.
- *Potentials for successful survival and recovery of silvery minnow populations along the reaches of the MRG that are subject to drying would increase with additional and larger of regularly wetted (irrigated) refuge pools.*
 - Silvery minnows appear to primarily obtain refuge or sanctuary during times of river drying in deep pools persisting along in the channel and in irrigation wasteway discharges to the river; these pools have natural ingress and egress.
 - Mike reported that most rescued silvery minnows had taken refuge in deeper pools and wasteway discharges.
 - In essence, the only time that silvery minnows were rescued from shallow water areas was when these areas started as deep pools.
 - A number of deep perennial pools exist during periods of channel drying along both the Isleta and San Acacia reaches. The numbers and sizes of these pools decline in the absence of channel rewetting events.
 - A number of irrigation wasteways exist along the lengths of the Albuquerque, Isleta, and San Acacia reaches. These can be characterized to include some that regularly carry water to the river, some that can be rehabilitated to allow for regular discharge to the river, and some that have become disconnected and cannot be reasonably reconnected to the river.
- *A Program priority should couple habitat restoration and water management efforts to produce deep scour pools (e.g., via strategic placement of instream log-deflections structures) that are maintained in a wetted condition along locations having more dependant water supplies, (i.e., the first several miles downstream of Isleta and San Acacia dams and downstream of irrigation wasteway discharges). Management of Program water and other water obtained to support the silvery minnow should include a high priority to keep these restored areas wet.*
 - An estimated 12 cfs over Isleta Dam would potentially maintain approximately 6 miles of downstream habitat (to approximately the 240 Wasteway); this reach currently also benefits from recharge via a relatively high surrounding groundwater level.

- An estimated 17 cfs over San Acacia Dam would potentially maintain approximately 9 miles of downstream habitat to near Socorro.
- Several wasteways, which typically are not continuously wet, could be maintained in a wetted condition with an estimated discharge of 3 to 5 cfs.
- Additional analysis would be required to verify these estimates.
- Wasteways need to be identified and priorities established for targeting associated habitat restoration work.
- For maximum effectiveness, any developed pools should include pathways for natural ingress and egress during higher flow conditions.
- Additional issues and questions for consideration:
 - Peak-flow and high flow conditions are required to fully benefit from the use of log-structures in the development of scour pools. When/how could mechanical excavation or other structural activities benefit development of permanent pool developments?
 - Dependable water management strategies, including the cooperation of MRGCD, need to be developed to maintain flows over the diversion structures and through the targeted wasteways.
 - Alternatives exist to pump from the Low Flow Conveyance Channel (LFCC) to irrigate an adjacent series of in-channel pools in the river; one pump could irrigate a series of pools extending approximately 2.5 miles; the pumps should be operated only to fill the pools, operation should not significantly rewet the channel downstream of the last in-channel pool of the series; multiple pump-pool series could be developed.
 - Is it essential, from a biological view, to keep the MRG wet from Central to Isleta (considering this is the end of the reach where relatively fewer silvery minnows would be expected to occur), or could that water requirement be better used to help maintain flows to downstream enhanced perennial pool habitats?
 - Should wasteway associated pool developments include pools both or either in-channel and/or off-channel relative to the river? Are there times or location that off-channel pools could provide additional or superior refuge conditions?
 - Pools developed in the Socorro area would require additional measure to control cattle access and associated water quality problems.